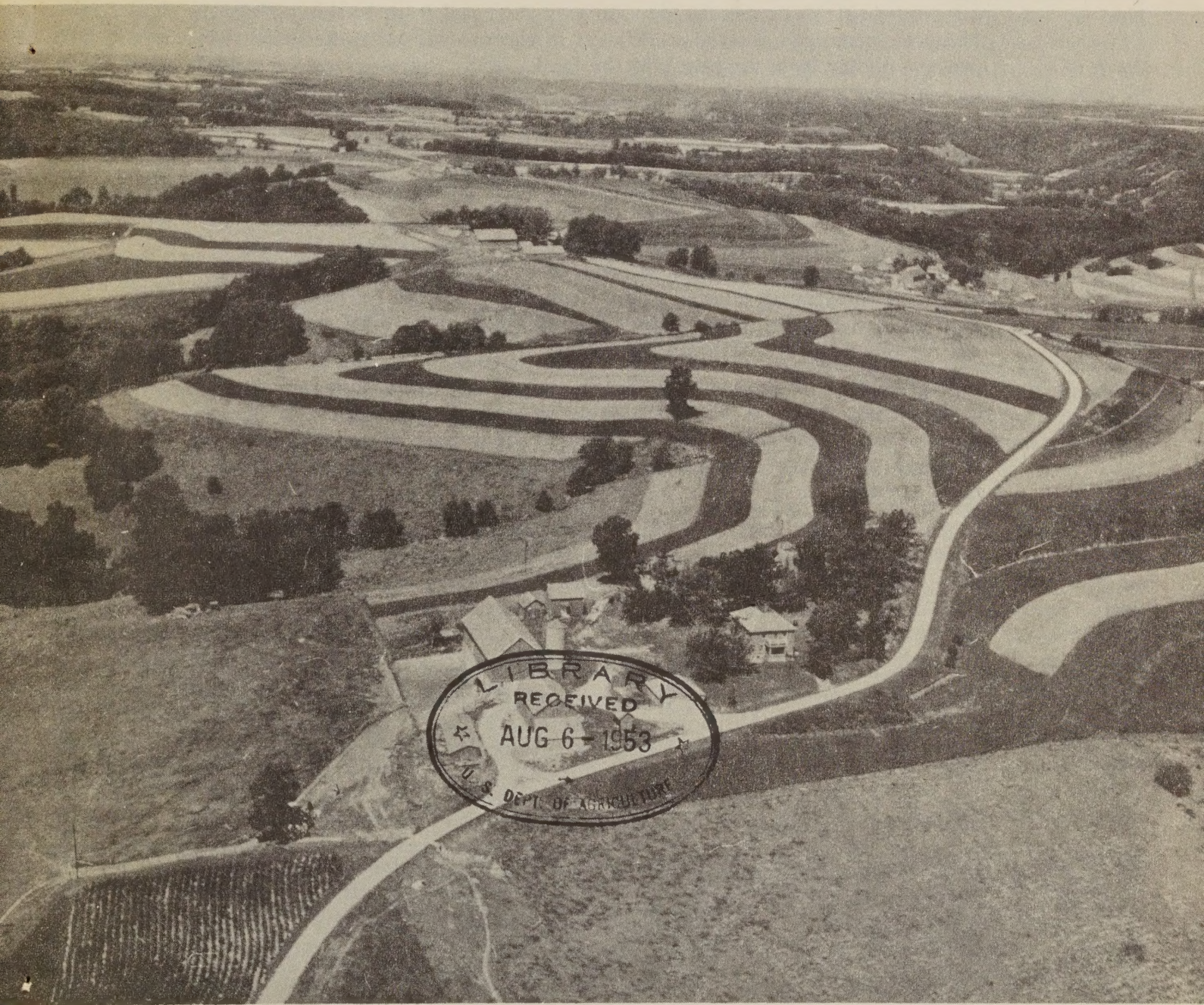


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Sizing Up Your FARM



A Guide to Soil Conservation Farming

based on a survey of the land in the La Crosse County, Wisconsin
Soil Conservation District

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
UPPER MISSISSIPPI REGION, MILWAUKEE, WIS.

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FOREWORD

Some 60 years ago a few farmers in La Crosse County started planting crops in strips across the slope to stop their soil from washing away. Many of them used grassed waterways to carry water from the fields to prevent gullies from digging into the land.

These practices were the forerunners of more complete soil conservation work to come. It was clear then that even though the land was very fertile, soil washed badly under the usual methods of farming. The farmers needed more information to help them devise ways to farm the land and still keep it productive.

The Wisconsin Agricultural Experiment Station and the U. S. Department of Agriculture, recognizing this need, established the Soil Conservation Experiment Station at La Crosse in 1931. Its purpose was to measure soil erosion losses with different kinds of farming and to try out various ways of controlling erosion.

In 1933 the Soil Conservation Service started the Coon Valley erosion-control demonstration project to show what could be done to control erosion on a whole watershed. Farmers in the project demonstrated the practices that had been tested on the experiment station and found to be sound.

In 1937 several farmers in the county started keeping farm records to find out just how conservation farming affected the amount of money they made. They also wished to learn, if possible, what adjustments they needed in their farm organization to get the most out of conservation farming.

Then in 1939 the Bostwick Creek Soil Conservation District was organized. This district was later enlarged to include all of La Crosse County, the unit that is now operating as the La Crosse County Soil Conservation District. The district is the local administrative unit of government that is responsible for the final phase of the conservation program which has been developing in La Crosse County — the job of actually getting conservation work on all the land in the county.

One of the first steps taken by the district was to make an inventory of the land. This booklet tells what was learned about the land from this land survey made by the Soil Conservation Service. It tells some of the things that you can do to conserve soil as demonstrated by you and your neighbors and backed up by tests at the experiment station.

If you live in this county or plan to buy land in the county, you will help yourself by reading this booklet. It is about La Crosse County land.

Farmers living in other counties in this part of the state where the land is similar to that in La Crosse County will find this booklet helpful. The land descriptions and the soil conservation practices described here apply equally well to these other counties.

LET'S LOOK AT THE LAND IN LA CROSSE COUNTY

A good dairy cow is the symbol of Wisconsin agriculture. In La Crosse County this is especially true. Because of the long, steep slopes which are so characteristic of this part of the state, erosion is a real problem. A large part of the land is left in permanent pasture because grass (and trees) give the best protection. The dairy cow is the best means of turning grass into cash products. Dairy farming helps the land because most of the crops fed to livestock get back into the soil.

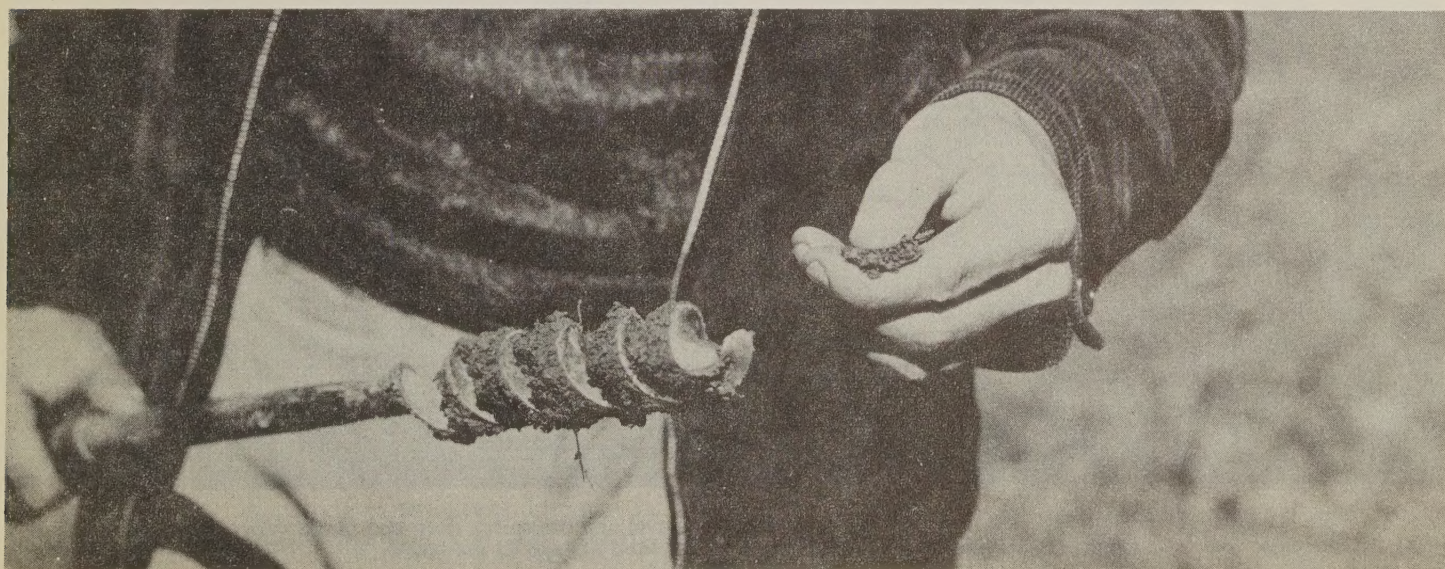
Farmers who grow corn or other cultivated crops on sloping land run the risk of soil erosion. The erosion control experiment station right here in the county has proved that soil moves downhill too fast when you plow unless you use special methods to prevent it. And, of course, when you sell a can of milk or an animal, the plant-food elements that are in these products are lost from the farm.

These two ways of losing fertility, erosion and selling plant food in farm products, are largely responsible for the declining fertility of our land. You avoid these losses by growing row crops and grain on the level and gently sloping land, as a rule. If you have to farm sloping land you use crop rotations, strip cropping, contour cultivation, and terracing to help hold the soil. Most dairy farmers keep their steep land — land that slopes 20 feet in 100 — in grass. They use fertilizers and lime to replace the plant food that leaves the farm when milk or animals are sold. They grow

alfalfa, sweetclover, and other legumes to replace the nitrogen and to improve the condition of the soil. In other words, use the land for growing the things that it is best suited to growing. And use the soil conservation practices needed to control erosion while it is in that use.

If you own a farm in La Crosse County, your farm has been mapped and classified by a soil scientist of the Soil Conservation Service. The soil scientists or surveyors walked over every field and examined the land by boring holes or digging with a spade to find the different kinds of soil. This also helped them learn how much soil was lost by erosion. They measured the slope to see how steep it was. All this information they put on maps. These maps are available at the soil conservation district office in the basement of the Courthouse at La Crosse.

The information gathered by the survey was used to classify the land according to how it should be used in order to prevent erosion and loss of fertility. Eight classes were set up and the classes are colored on the maps. These soil conservation survey maps show how much land there is of each class and where it is located. They are guides for planning safe use for every part of your farm. They show, for example, that some land is suitable only for trees, some land is best used for permanent pasture, and some can be used safely for cultivated crops with certain protective measures.



HOW WELL DO YOU KNOW YOUR LAND?

Here are the descriptions of the eight land classes. How much of each class of land do you have? Are you farming to fit your land?

LAND SUITABLE FOR CULTIVATION

Class I Land (colored light green on maps)

Class I land in La Crosse County is nearly level — that is, it has less than two feet fall in 100 feet. The soil is deep — at least 3 feet in which plant roots can grow and be comfortable. It is loamy and crumbly — not too sandy or too sticky. It has had little or no damage from erosion or flooding. It does not need draining.

You will find the major areas of this kind of land on the bench land or second bottoms along river or creek bottoms. Some well-drained bottom lands right next to streams also are included in this group.

You can grow corn more often on Class I land without harm to the soil than on any other land in the county. It needs only a good crop rotation, fertilizer, lime and manure. A 3-year rotation of corn, grain, and hay is recommended for this class of land.

Only 4.4 per cent of the land in La Crosse County is Class I land.



Class I land along Highway 108, north of West Salem. It is level and the soil is deep and black. Very little soil has been lost by erosion. There are nearly 11,000 acres of this kind of land in the county.



Class II land in Gill Coulee, east of La Crosse. It is gently sloping and has lost about a third of the topsoil. The soil is deep. There are 42,000 acres of Class II land in the county.

Class II Land (colored yellow on maps)

Class II land has some drawback that makes it a little more difficult to manage than Class I land. It may have deep soil like Class I land, but is slightly more sloping, and therefore subject to erosion. Or, it may be level but not so well drained as it should be — just wet enough to make spring work a little late.

It takes better management to control erosion and keep up soil fertility on Class II land than on Class I land. Farmers conserve it by using a few easily applied soil conservation practices.

Here are the principal kinds of Class II land in the county:

1. Good deep soil, at least 30 inches deep to any layer of rock or other material that stops roots from growing deeper. It slopes as much as 6 feet in 100 feet. As much as half the topsoil may have been lost. Most of your Class II land is on the rounded ridges and on the gently

sloping benches along river or creek bottoms.

You can control erosion on this land by using crop rotations and contour strips or terraces. A 4-year rotation of corn, grain, and 2 years of hay is safe if the crops are planted in contour strips. If the field is terraced a 3-year rotation of corn, grain, and hay is satisfactory.

2. Some land falls in Class II because it is flat and the subsoil is a little too tight and sticky to allow water to go through easily. You can't get into the fields as early in the spring as you should on this account. There is little or no erosion. Some of this land is bottom land along streams. Some is on the benches or second bottoms along rivers and creeks.

A 4-year rotation is necessary to keep the soil in good physical condition. The better the physical condition the better water will drain. Terraces or contour strips are not needed.

Nearly 15 per cent of the land in the county is Class II land.



Class III land along Highway 33 in La Crosse County. The soil is about 2 feet deep and is light in color. It slopes as much as 12 per cent and has lost half its topsoil. Nearly 30,000 acres in the county are Class III land.

Class III Land (colored red on maps)

Class III land is moderately good but it takes even more careful management to keep it good than is needed for Class II land.

Class III land can be farmed regularly but it must be farmed carefully. Some of it is moderately sloping and subject to serious erosion. Class III also includes land that is slightly wet and in need of drainage and land that is moderately sandy and somewhat droughty and low in fertility. Let's look at these three kinds of Class III land one at a time.

1. Sloping Class III land consists largely of soils that are from 15 to 30 inches deep on slopes up to 12 per cent. Most of this land is over limestone, although some is over sandstone. You will recognize it by the dark, grayish-brown surface soil. It is a smooth silt loam. Just below this is a little heavier layer and below that, over the limestone, is a reddish-brown tight, sticky layer that ranges in thickness from a few inches to a foot or more. The soils over sandstone must be at least 20 inches deep in order to be placed in Class III.

Erosion is usually bad on sloping Class III land. From one-half to three-fourths of the topsoil has been lost.

You can control erosion on sloping Class III land by using a good crop rotation and other soil conservation practices. If you use contour strips, a 5-year

rotation that includes 1 year of row crops, 1 year of small grain, and 3 years of hay will furnish good protection against soil losses. If this land is terraced, you can get good results with a 4-year rotation, 2 years of which are hay.

2. Class III land that needs drainage is loamy and workable to a depth of about 12 inches. At this depth there is a heavy gray or pink clay and at about 20 inches a very heavy and sticky red or gray clay speckled with gray, pink, and yellow. This land lies on some of the higher benches and is nearly level to gently sloping. Water moves through the soil very slowly.

There is not much danger of erosion on this poorly drained land but it needs drainage. In some areas open ditches can be used to get rid of surface water. Running the crop rows toward the ditches may help. All the difficulty cannot be overcome. Even after the excess water is removed from the surface the land dries very slowly. A 4-year rotation including 2 years of hay will help.

3. On sandy Class III land crops can be grown in only a limited way because of low fertility and danger of drought. To a depth of 1½ to 2 feet the soil is light-colored sandy loam. Below is loose sand. Water passes through rather rapidly. You find land of this kind on the benches and in the uplands. Slopes are short and uneven and range up to 6 or 7 per cent. Water erosion may be severe on the sloping land. The level areas are subject to slight wind erosion.

Fertility needs to be built up. You will need to apply lime, manure, and fertilizer. A 5-year rotation of corn, small grain, and 3 years of alfalfa and brome-grass will build up the soil and protect it from wind and water erosion. Plant in field strips or in contour strips, depending on how the land slopes. Windbreaks help to prevent soil loss by blowing. If they are used, a 4-year rotation with only 2 years of alfalfa and brome-grass is satisfactory. Rye is a good crop to use after corn. It makes good winter cover

and serves as the nurse crop for the hay seeding the following spring.

To grow alfalfa on these sandy soils you will need to use the most careful management. The alfalfa should not be cut before the middle of June and not more than two cuttings should be made per year. Do not pasture the alfalfa between September 15 and October 15. In general, careful management of grazing, cutting, and fertilizing is necessary.

About 10 per cent of the land in the county is in Class III.

Class IV Land (colored blue on maps)

Class IV land is so steep, eroded, or sandy that it is suited only for very limited cropping. It should be kept in hay or pasture and plowed up only once in 6 or 8 years or only when the hay stand needs renewing. There are two kinds of Class IV land in La Crosse County:

1. Sloping land — up to 20 feet fall in 100 feet — that consists of 15 to 20 inches of soil over limestone or sandstone fragments. Naturally, erosion on this land is serious if the soil is not covered by crops such as hay and pasture most of the time. You can use it for grain once in about 6 years without damage if you seed it back to grass. Its best use is hay or pasture.

When it becomes necessary to renew the grass stand, plow the fields in narrow contour strips — not over 50 feet wide. Leave a grass strip between the

plowed strips. Use diversion terraces to prevent water from land above from washing over.

2. Level sandy land that is droughty. It will produce crops when there is enough rain at the right time. The soils are loamy sands — that is, a very little clay and a little silt are mixed with the sand to a depth of 14 inches. Below this is pure sand.

A corn crop 1 year in 6 is about all this kind of land can support. After corn, you can raise a grain crop. Follow the grain with alfalfa and brome, which should be kept at least for 4 years. To do this, manure, lime, fertilizer, green manure, and cover crops must be used liberally. Plant windbreaks to reduce wind erosion.

Eleven per cent of the county is Class IV land.

Class IV land in La Crosse County. This land slopes 20 feet in a hundred and has lost over half the topsoil. There are 32,000 acres of Class IV land in the county.



Class V Land (*uncolored on maps*)

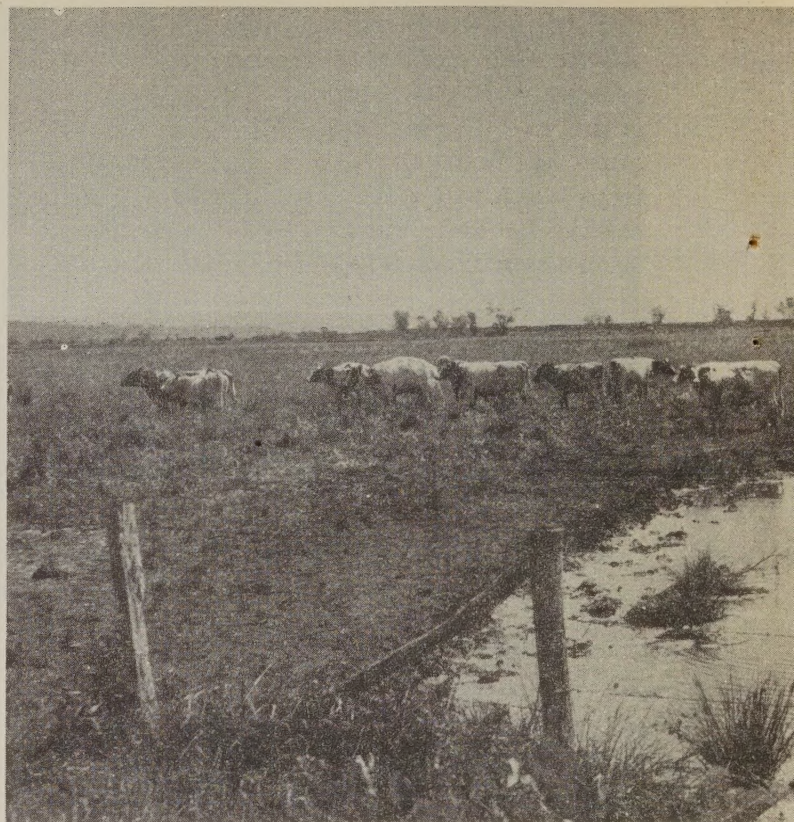
Along the Mississippi River and at the mouths of major streams like the La Crosse and the Black River are large areas of wet, poorly drained land. Ground water stands high in these areas and they overflow frequently. Artificial drainage is not practicable. Even if drained, they do not make good cropland. Yet this land may produce good pasture and will not wash away no matter how hard you graze it.

Some farmers are getting good results from seeding reed canarygrass and Ladino clover on these areas of wet land.

Clipping the weeds will improve the grazing and make it possible for cows to graze the stand evenly over the whole field.

Level land covered by stony material washed from higher land is also Class V land. It will support grass or trees without danger of erosion.

Less than 3 per cent of the county is Class V.



Class V land in the Mississippi Valley, west of Midway. This land is always wet and cannot be drained satisfactorily. There are 6,500 acres of Class V land in the county.

Class VI Land (*colored orange on maps*)

Class VI land is so steep or its soil is so shallow that it is not good for cultivation and needs considerable care even to grow pasture or timber. Most of the Class VI land in La Crosse County has shallow soil, 15 to 20 inches deep over limestone, on slopes of 15 to 30 per cent. Erosion on these steep slopes has not been severe where the land has been kept in grass or trees. (Badly eroded land of this kind is placed in Class VII.)

This land can be used for pasture, but the grazing must be controlled in order that a good stand of grass can be maintained. When the sod is thin it can be improved by renovation, that is, by working up the sod with a field cultivator, liming, fertilizing, and seeding to a good legume-grass mixture. If this land is already in trees it probably should stay in trees as it would not pay to clear it for pasture.

Nearly 14 per cent of the county is Class VI land.



Class VI land in La Crosse County. The best use is permanent pasture. This land slopes up to 30 per cent and the soil is less than 20 inches deep to limestone. There are 48,000 acres of Class VI land in the county.

Class VII Land (colored brown on maps)

Class VII land is steeper and rougher than Class VI, is more severely eroded, or is deep, loose sand.

The rough broken land and steep eroded land needs a cover of grass or trees at all times. Where grass is growing, some grazing is possible but it must be managed very carefully to prevent erosion. Where trees are growing, they should be left and protected from fire and fenced to keep out livestock. More caution must be used in cutting and removing trees than on Class VI land. In other words, Class VII land is more limited in use, has more restrictions, and needs more care to prevent erosion than Class VI land.

Some Class VII land consists of deep sand on second bottoms or benches. The sand is several feet deep and is so droughty it is not recommended for crops or for grass. It has now been found that pine trees will grow on these deep sands if you plant them properly.

Over 35 per cent of the county is Class VII.



Class VII land, northeast of St. Joseph. There are 108,000 acres of Class VII land in the county. The soil is shallow and the slopes are steep. Its best use is trees.



Class VII deep sandy land in La Crosse County. Row crops are not suited to this land.

The best use for these deep sandy soils is trees.



Class VIII Land (colored purple on maps)

Class VIII land is not suitable for cultivation and will not support trees, grass, or legumes. It consists of the sloughs in the Mississippi River Valley and the bare rock faces that occur occasionally in rough broken land. The sloughs are good for the production of muskrats and other forms of wildlife.

Nearly 8 per cent of the county consists of Class VIII land.



Class VIII rough and stony land in La Crosse County.



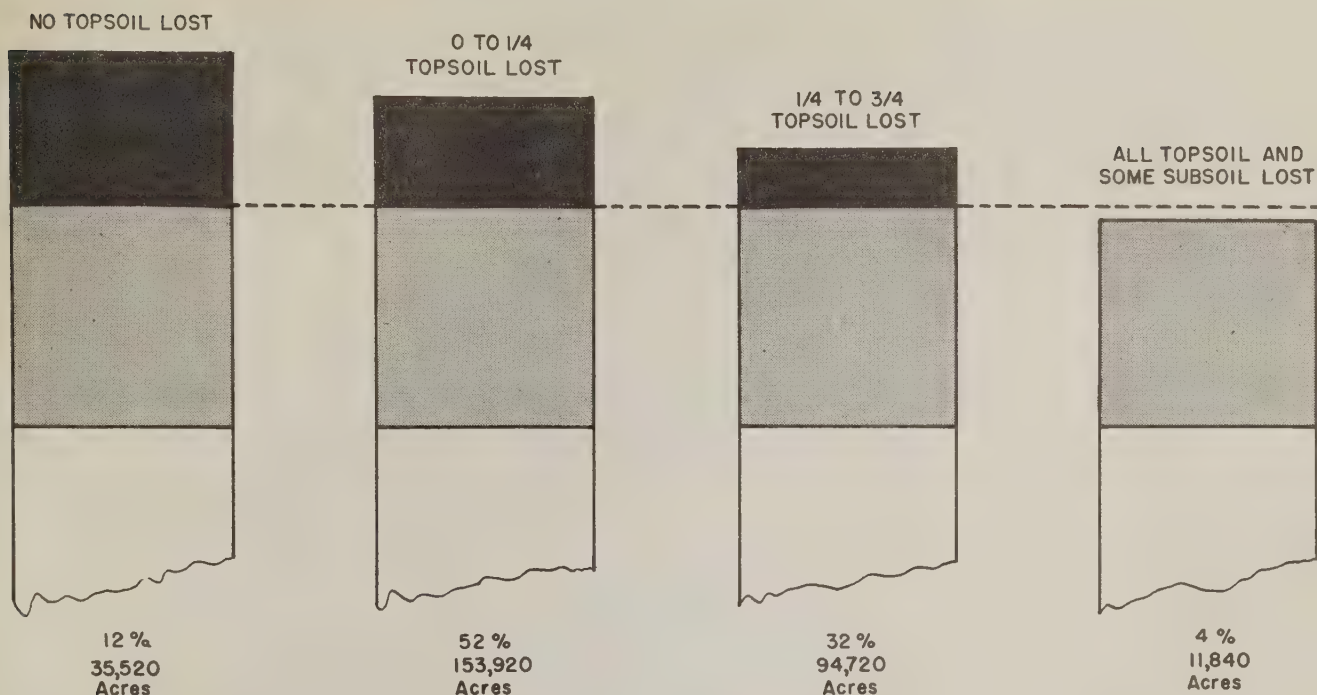
Class VIII wet land in Mississippi River bottom.

SOIL CONSERVATION FARMING PAYS

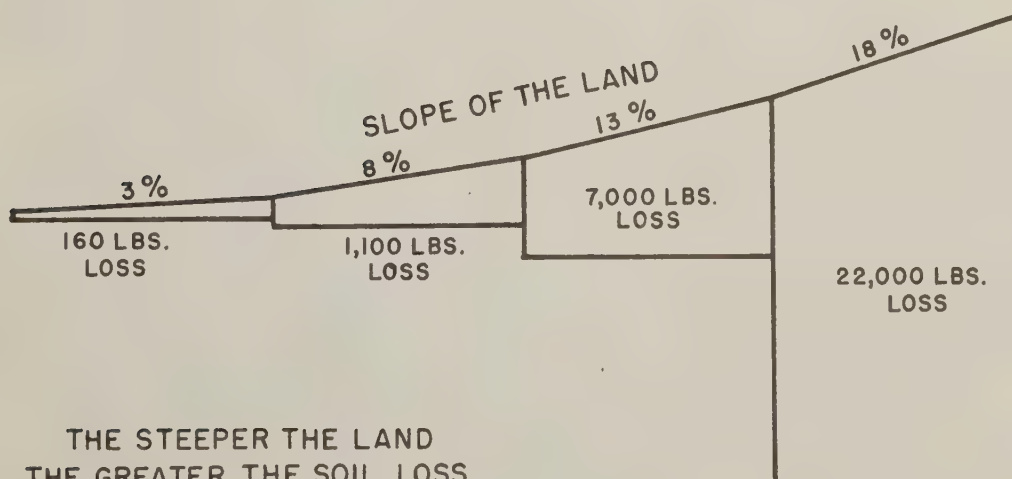
Studies made by the Soil Conservation Service and the Wisconsin Agricultural Experiment Station of actual production on farms show that it pays to conserve soil. Thirty-three farms in the La Crosse area were studied. Crop yields were more than 16 per cent higher on the farms where soil is conserved than on the farms without a definite soil-conserving program. Soil conservation was especially important in getting higher corn and small grain yields. Hay and tobacco yields were also greater.

Better types of crops and greater yields per acre have provided 25 per cent more feed on these farms. More feed has meant more livestock. In fact, it meant almost \$1,400 more total sales of livestock, milk, and eggs per farm. Dairy farming fits a soil-conserving program in La Crosse County. This means that the adoption of a soil-conserving system of farming can be made in the county with a minimum of changes in the present system of farming.

THE AMOUNT OF SOIL THAT HAS BEEN LOST IN LA CROSSE COUNTY



SOIL LOSS IN POUNDS PER ACRE EACH YEAR FROM 3 YEAR ROTATION OF CORN-OATS-HAY



Measurements from La Crosse Experiment Station

THESE PRACTICES WILL HELP YOU SAVE SOIL



Grow corn and grain in strips with a sod crop in between. These strips should be of about equal width and are approximately on the contour. Measurements on fields at the Soil Conservation Experiment Station show that strip cropping will reduce soil losses as much as 75 per cent.



Terraces are like eave troughs and carry water slowly around the hill to a grassed waterway or pasture where it is carried from the field safely. Terraces and strip cropping must be laid out by someone who is experienced at the job.

Grassed waterways carry surplus water from fields without forming a gully. They not only protect the natural drainageway but provide hay for livestock and cover for ground nesting birds.



Protect woods from fire and grazing. Harvest timber like any other crop, leaving enough young trees to maintain the stand.

Return all crop remains to the soil and plow under legumes to add nitrogen and organic matter.

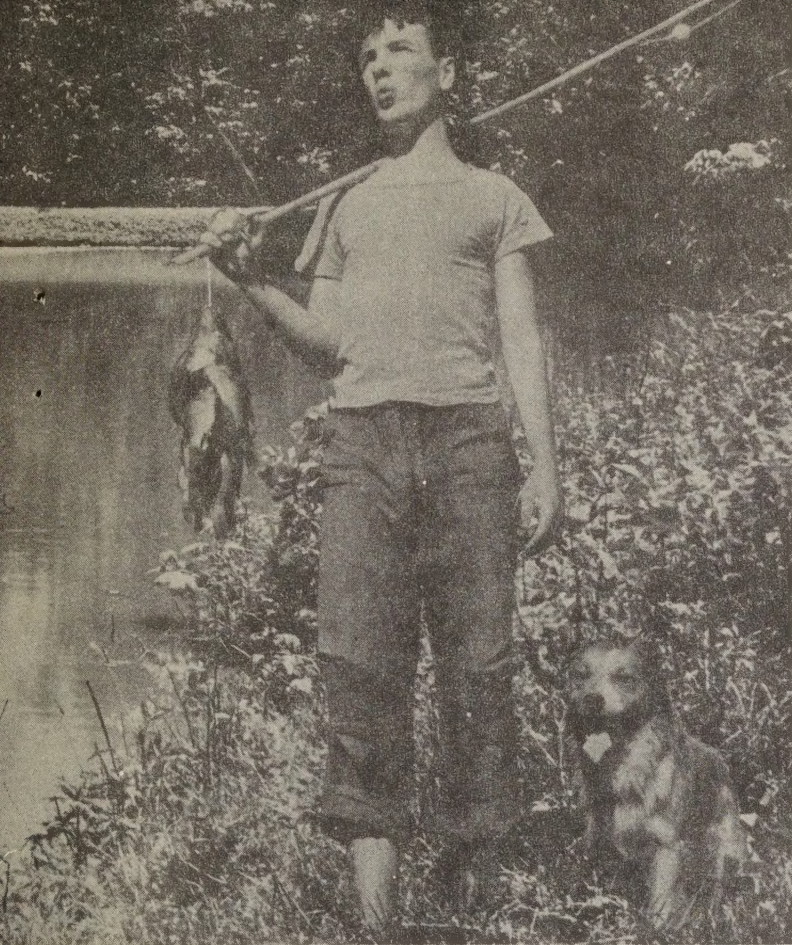




This La Crosse County farmer planted trees in this large gully and will protect it from fire and livestock. Such treatment makes possible the use of badly gul-
lied areas for wildlife and for useful wood products.

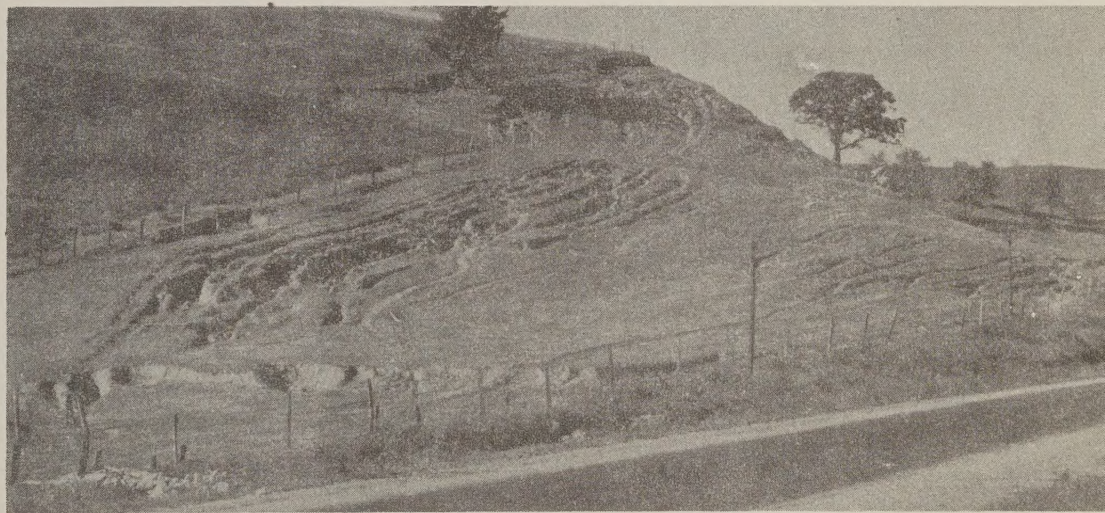
These two photographs show what can be done to correct serious streambank erosion. The pictures were taken only a few months apart. Treatment consisted of sloping, fencing, and matting with willows.





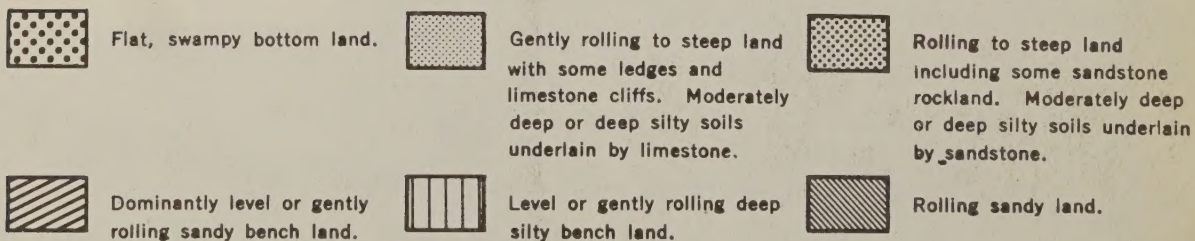
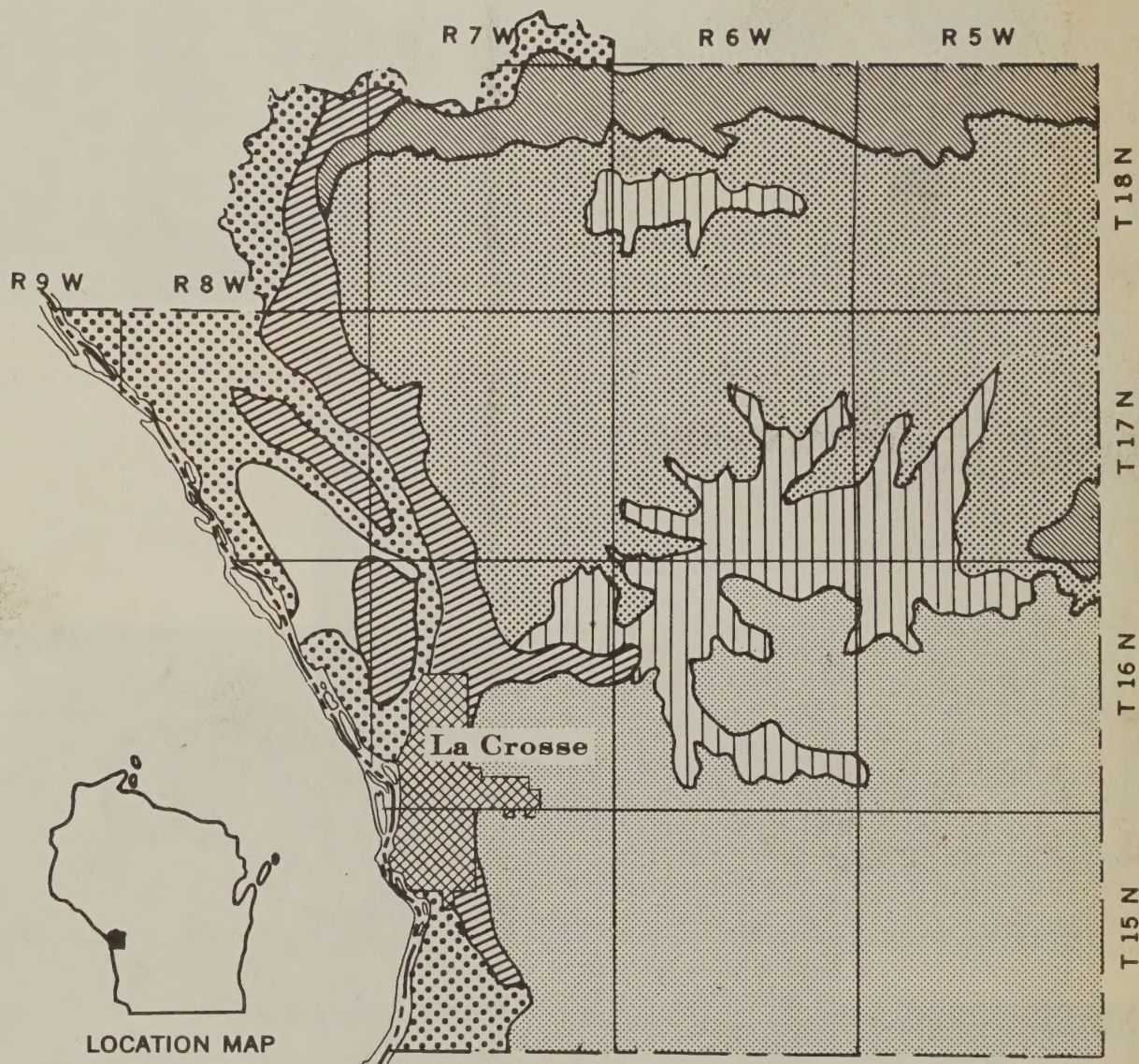
A protected streambank, combined with a protected watershed, is one of the best methods of improving wildlife conditions. It provides food, cover, and water close together, and improves the stream for fish.

Lane erosion in La Crosse County.



Improved pastures such as this protect the land and provide high quality feed for cattle.





Map of La Crosse County Soil Conservation District showing problem areas based on land inventory.